

Brickell Breaks Encryption Scheme

Two years ago California mathematician Ralph Merkle, annoyed at the national publicity accorded an Israeli mathematician who broke just one version of a cryptosystem he had co-invented, publicly offered \$1000 to anyone who could break the full version of his code — more precisely, cipher — system.

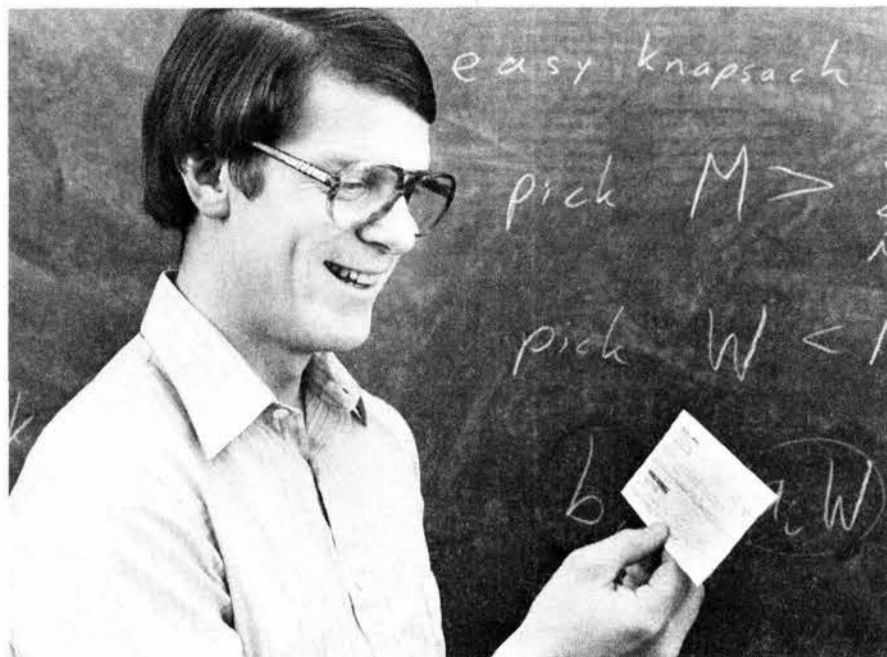
The challenge even appeared in a letter from Merkle in the Nov. 15, 1982 *Time* magazine.

Groups throughout the United States and Europe took up the challenge. A few made partial progress. Now one mathematician has succeeded.

That man is Ernest Brickell of Applied Mathematics Division 1641. As a result Ernie is this month \$1000 richer (less the cost of a lunch for his colleagues) and has secured a place for himself in the history of modern-day cryptanalysis.

The code-breaking achievement took place over a two-year period. Ernie, who came to Sandia in 1981 fresh with a PhD from Ohio State University, says he realized only gradually that he had broken the cryptosystem. He checked and double-checked his code-cracking algorithm, cleared up minor problems with it, and distributed copies to Merkle and other interested parties. "The exhilaration came when I found Merkle's check in the mail," he says.

The check was accompanied by an enthusiastic letter from Merkle: "Congratulations on breaking the iterated knapsack; the result is very impressive! I am enclosing the check for \$1000; you deserve it. I hope that your work will be given the full recognition that it deserves."



CODE BUSTER — Ernie Brickell (1641) holds the \$1000 check he received from Ralph Merkle, one developer of the "knapsack" cryptosystem that Ernie broke. Merkle had challenged cryptanalysts to break the code in a letter in *TIME* magazine two years ago.

Gus Simmons, manager of Sandia's Applied Mathematics Department 1640, considers it an extraordinary achievement.

"It's a beautiful coup. It was a well-known challenge. Everyone was working toward it. Some thought they were close, but Ernie finally got it."

Just because the challenge appeared in a popular newsmagazine doesn't mean it wasn't serious business. "We're not talking about toy systems here," says Gus. "These were real cryptosystems."

What Ernie found was a way to cryptanalyse, or break, the entire class of encryption schemes known as multiply iterated knapsacks.

Knapsack cryptosystems were the first proposed schemes for two-key (also known as public key or asymmetric) cryptography. Two-key cryptography is used both to keep electronic messages secret and to authenticate them (electronic signatures). The use of two "keys" or codes, usually strings of numerals, allows one of them to be publicly known without giving anything away and thus simplifies the message-handling process.

Knapsack systems are much faster than the most widely used two-key cryptographic system, the RSA, which depends upon the difficulty of factoring very large numbers. (Sandia's mathematicians have been making world-record achievements in that area also!) Knapsack systems have been serious contenders for important applications, but they are not in commercial use anywhere. One reason was concern that they might not prove to be secure. That suspicion, Ernie's work shows, was well founded.

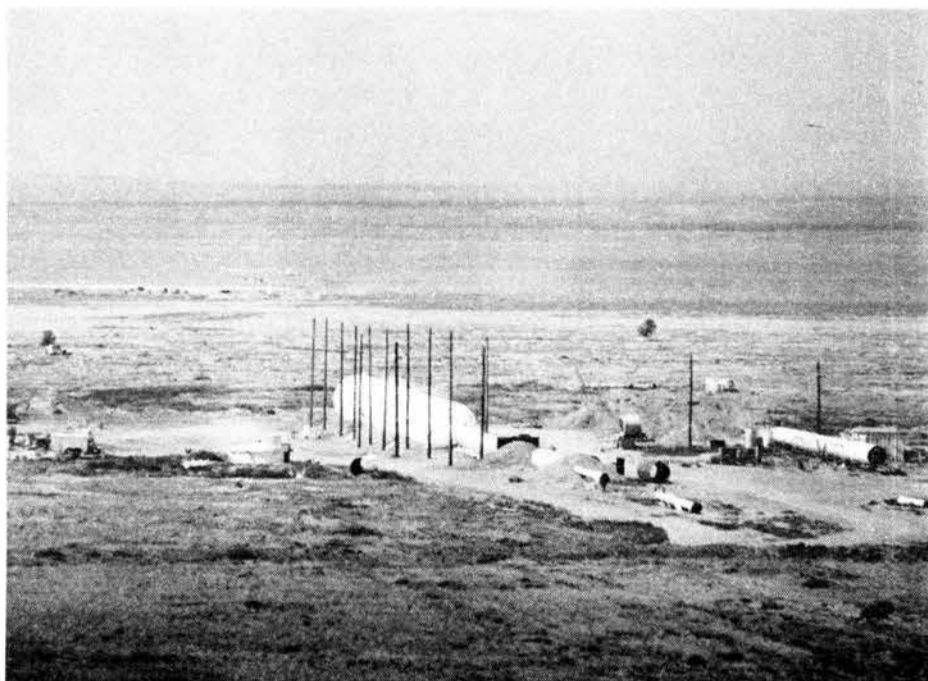
Nevertheless, many mathematicians, including Merkle, thought that multiply iterated knapsacks would be secure. "I don't think that his challenge was unreasonable at the time," says Gus.

One measure of that confidence, says Ernie, was the \$1000 amount of the challenge. There is a tradition in cryptography for the designer of a new cryptographic system to offer an award to the first person to break it. "But," says Ernie, "the usual amount is \$100."

(Continued on Page Four)

LAB NEWS

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THUNDERWELL TEST — In operation only six weeks, the new 19-foot-diameter shock tube south of Area III is seeing plenty of action. In the second photo, 1000 lbs. of HE is detonated in the driver section of the tube (earth-covered black section) to create a massive flat shock wave that simulates a



nuclear blast shock wave. A model of a mobile Midgetman missile launcher is contained in an instrumented test chamber inside the larger portion of the tube. Four different models of the launcher are undergoing shock testing.

See article on Page Five

Antojitos

Toward an Understanding of Baja Oklahoma "Travelhost" is one of those motel room magazines filled with laudatory columns about the restaurants that bought ads in the magazine. Someone sent me the Fort Worth edition, and I'd like to share some Texas wisdom:

1. You can buy souvenirs of the Ft. Worth stockyards. [I suggest checking your luggage through for the flight home.]
2. If you're going to buy a belt with initials on the buckle, make sure they're your own. [Texans have to be told things like this.]
3. For "a new breed of status," you must buy a Mercedes 190, aka "Baby Benz." One model "recently set three world records by averaging 154 mph for 50,000 km." [Even Texans don't want to spend more time than necessary crossing the state.]
4. After a hectic business day, you should take a soothing milk bath in your motel. "Fill a six-inch square of gingham [Texans apparently tuck same into their luggage] with one-half cup [along with measuring cups] of instant milk powder [probably a voucherable expense]. Close tightly with an elastic tie. Squeeze the bag beneath running water and watch the bath turn milky blue. Since milk is a natural moisturizer, your skin will feel sleek and smooth and be less dry after your sojourn in the tub." [I like the way old-fashioned Texans did it—check in with a cow.]

Outsiders must realize that Texas is to New Mexico what California is to Oregon—too big to ignore, too rich to snub, and too pushy not to get pushed back whenever we get the chance.

* * *

Surely Not the Wall Street Journal! In its 10/5 issue, the WSJ ran a cartoon of a bank robber being told by the cashier, "There really shouldn't be a hyphen in 'stickup.'" Above the cashier's head is a sign reading "WITHDRAWALS." [Probably a Texas bank.]

* * *

Some Sentences Beg for Punctuation From a recent job posting in the "Weekly Bulletin": The successful job applicant will be expected to coordinate a complex fabrication throughput to have good people interactions skills and interface effectively with a variety of technology development and design groups. BH

* * *

A closed mouth gathers no feet.

Hero Charms STEP Teachers

Teacher Meets Predictable Student

Roy Hammit, one of the three STEP teachers assigned to Sandia, became intimately acquainted with Hero and Ray Harrigan (of Intelligent Machine Systems Division 6228) this summer. Hero is a robot used as a teaching device, and he made his debut as an after-dinner speaker at an event honoring all 24 of the state's STEP teachers and the 11 employers who hired them for the summer.

Working with Ray, Roy programmed the sensor-driven robot to detect levels of light, sound, and motion; judge range and distance; communicate via a speech synthesizer; and move from place to place on command.

Hero was something of a hit at the dinner. But, as Nancy Finley (3523) points out, all of the teachers in STEP worked on some interesting projects, albeit not as dramatic as Hero, and gained a clearer understanding of the skills they should be passing along to their classes.

Roy exemplifies that kind of insight. He has already started a robot club at Sandia High that serves as a focus of interest for 25 students who stay after school to learn to program simple robots.

That's the kind of ongoing interaction with the schools that STEP is all about.



MEET HERO, a robot programmed last summer by (left) Roy Hammit, a STEP teacher, and Ray Harrigan (6228). Thanks to Roy's learning experiences at Sandia, Hero may someday have some relatives at Sandia High — Roy has organized an after-school interest club for 25 students interested in programming — and maybe someday, building — robots.

Pilot Program Successful

A STEP Toward Better Teaching

The critics of education in the public schools generally agree that math and science teachers need to upgrade their knowledge of science and technology — to learn what's happening in their fields in the "real world" outside the schools.

To the extent that Sandia Labs represents this real world, we have played a leading role in developing a program by which some New Mexico middle and high school math and science teachers spend their summers working in it — that is, working with mathematicians, scientists, and engineers on site. Sandia and 10 other employers around the state (private firms, national labs, other governmental agencies) took 24 teachers on their rolls this past summer and gave them a chance to see how their teaching relates to the real world of research and development.

The program was called STEP, Summer Teacher Enrichment Program, and through it Roy Hammit, a physics teacher at Sandia High; Marie Risberg, a science teacher at Logan; and Bill Schrandt, a science teacher at Albuquerque High, were assigned to Divisions 6228, 6222, and 6241, respectively. Marie relocated to Albuquerque from Logan for the summer to take advantage of the program.

"This pilot program was quite successful," says Nancy Finley, the math/science education liaison in 3523 who coordinated STEP at Sandia and worked with NM Tech at Socorro, the focus of the program. "The teachers were unanimous in their praise of the STEP concept and in their enthusiasm about their plans to include what they learned in their teaching strategies. The employers also declared the program worthwhile. In fact, plans are now underway for a considerably larger program next summer."

President Dacey has been one of the strong supporters of STEP, and he's urging more Sandia organizations to participate in the program next summer.

LAB NEWS

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Device Allows Calibration of Welding Power Sources

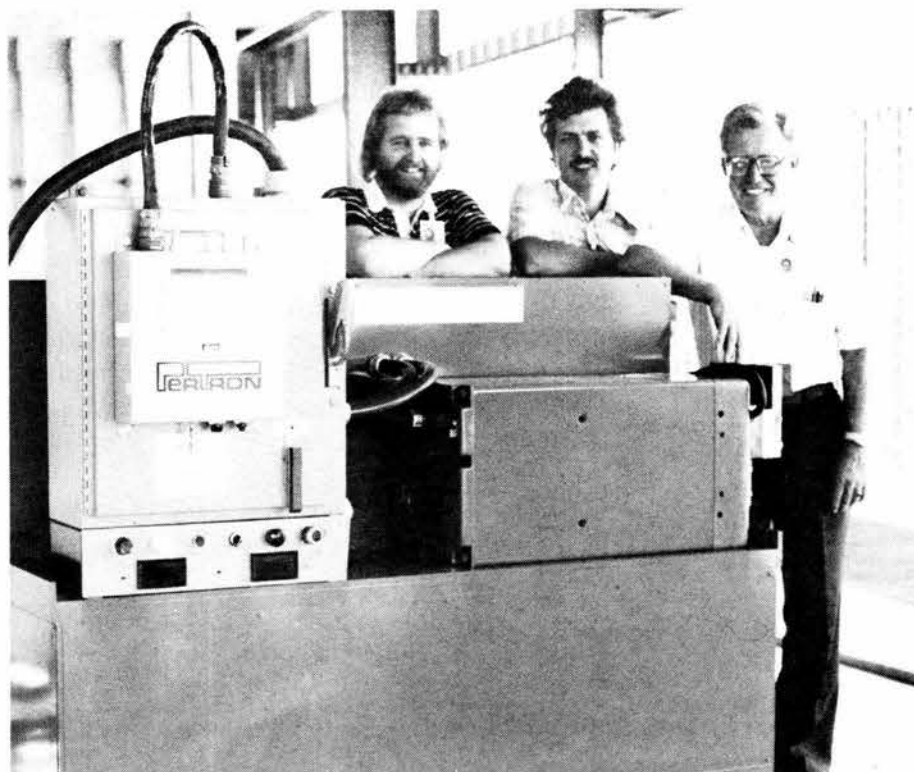
Better weldments by the DOE weapons complex — that's the likely result of a welding power source that Sandia developed recently. The high-output, pulsed, programmable device has been delivered to the National Bureau of Standards.

"In the past, the transducers used to measure the current in high-current resistance welders were either calibrated below their maximum rating or they weren't calibrated at all," says Jim Hopwood (8186), designer of the new power source. "This lack of transducer calibration made process monitoring of weld parameters inadequate, if not impossible. So weld development was very difficult. Our goal was to minimize the amount of radiographic inspection and sectioning required for weld development and to rely more on process control."

The device meets that goal: transducers that measure the current flow (up to 100,000 amps) in the welding operation can now be tested for quality control. Until now, the current measuring techniques at the Bureau were not developed above 10,000 amps because of limitations on generating equipment.

This new, fully programmable computer-controlled instrument can generate current to 100,000 amps through a 10-microhm load in pulsed or continuous mode.

The calibration device previously used by NBS had not been significantly changed in a decade. The new transducer calibration device designed by Jim brings modern technology and computer instrumentation techniques to the calibration process.



ONE-OF-A-KIND welding transducer calibration power source and the people who developed it: (from left) Kevin Davidson (8271), who did the drawings; Rich Campiotti, who worked on the checkout and assembly; and Jim Hopwood (both 8186), who designed and installed the system at the National Bureau of Standards.

Louie Tallerico (8185) called a meeting of representatives from the DOE weapons complex last spring to discuss the lack of calibration of welding equipment. The need for a calibration device was evident, and fabrication on it began shortly thereafter at Livermore. Jim reports that SNLA has re-

quested that one be fabricated for use in its primary standards lab.

The National Bureau of Standards, located at Gaithersburg, Md., is the center of measurements for all US industry. The new welder transducer calibrator will be used for private industry and government agencies alike.



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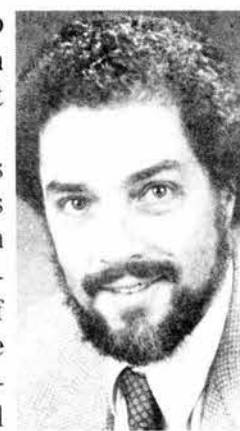
Supervisory Appointment

BILL McLEAN to manager of Combustion Technology Department 8360, effective Oct. 1.

Bill started his career with Lockheed's Palo Alto Research Center where he was involved in modeling of SST aircraft engine emissions. He then joined the faculty of Cornell University where he was associate professor in the Sibley School of Mechanical and Aerospace Engineering. He came to Sandia Livermore in 1978 on a sabbatical from Cornell, and joined the Combustion Sciences technical staff in mid-1979. His coal combustion research centered on the examination of processes taking place during pulverized coal combustion. In 1981 he was named supervisor of the Combustion Chemistry Division 8353.

He received his BS and PhD in ME from UC Berkely.

Bill serves on the program and publications subcommittees for the Combustion Institute. His major recreational activity is sailing a 27-foot sloop on the Bay. He and his wife Suzanne have two sons and live in Oakland.



SANDIA'S EMPLOYEES TOURNEY golf team won the second annual NCGA Associate Clubs championship on recently at Rancho Murieta. The tournament was played in a four-man best-ball format. Team members (left to right) are Linn Derickson (8441), John Lippold (8314), Larry Hoffa (8271), and Ben Odegard (8316). Their two-day score was 59 plus 55 (114 total), six strokes better than the second place finishers. Each team member won the NCGA medal above.

Congratulations

Mary Mendez (8363) and Darrel Shoji, married in Lodi, Sept. 15.
Rob (8316) and Kathy Allen, a son, Mark

William, Sept. 24.

Bob and Tracey Lamee (8241), a son, Andrew Robert, Sept. 24.

Brickell Breaks Encryption Scheme

"There has been an enormous amount of attention to knapsacks," says Gus. "This was the big challenge. There has been a large number of players achieving significant results, but all this time the multiply iterated knapsack has eluded capture."

It wasn't for lack of interest. In 1983 Len Adleman of USC and Jeff Lagarias of AT&T Bell Labs discovered attacks on the double-iterated system. Lagarias, Andrew Odlyzko

(also of Bell Labs), and Brickell devised an attack on a certain class of knapsacks. Knapsacks that have been iterated *too* many times are in that class.

Still the general system of iterated knapsacks had not been cracked.

That's the challenge Ernie Brickell beat when he found a way to break the code of multiply iterated knapsacks. He has used his code-cracking algorithm to successfully break encrypted knapsacks that are 100 numbers long and have undergone 20 iterations.

Doing exactly that took less than two hours of computation time on Sandia's Cray 1S supercomputer.

His method applies not only to the multiply iterated knapsack cryptosystem invented by Merkle and Hellman but also to one devised by Ron Graham and Shamir as well. It will also break several other knapsack-based cryptosystems.

Ernie's technique has another surprising

property. "The speed at which I can break the system has little to do with how many iterations were done. I can break 20 iterations almost as fast as 2."

How can that be? People thought the problem would have to be attacked by "stripping off iterations one by one." His method avoids that enormous obstacle. He found a way to use a single function to change the series of public numbers into an easy knapsack problem. "That's sort of the reason that the time required doesn't depend on the number of iterations. I'm just looking for this one function."

So Ernie Brickell has not only won \$1000 and solved a formidable intellectual challenge. He has put a proposed cryptographic method to the test and found it to be not as secure as some had thought. Discovering and exploring these limits is the whole purpose of Sandia's mathematical attacks on new encryption schemes.

Events Calendar

Oct. 26 - Nov. 11 — "Mass Appeal," with guest star Ralph Waite (of the TV series "The Waltons"), Albuquerque Little Theatre, Tues.-Fri. 8 p.m., Sat. 6 & 9 p.m., Sun. 2 p.m.; 224 San Pasquale SW, 242-4750.

Oct. 27 — Artie Shaw and his orchestra, 9 p.m. - 1 a.m., Convention Center, 298-1002 or 766-7660.

Oct. 27 — NM Folk Music Society: Sparky Rucker in concert (blues and bottleneck style guitar), Longfellow School, Edith and Grand, 8 p.m.

Oct. 30 — APS Parent Center Seminars: psychologist Tom Carey, "Living With Today's Teenager"; Nov. 13 — education specialist Jane Bluestein and counselor Lynn Collins-Fantozzi, "Building Positive Parent/Child Relationships Through Communication," 7-8:30 p.m., APS-TVI Boardroom, 717 University SW, no admission charge, but reservations requested, 292-0101.

Oct. 31 — KiMo's third annual Halloween Show: Michael Anthony In Mime, "Brew-Ha-Ha" — magic, juggling, balloons, tightrope walking, mime, and music. Come in costume, bring your carved pumpkin; 7 p.m., KiMo.

Nov. 1 — Guitar Series: Leo Kottke solo concert, blues and jazz, 8 p.m., KiMo.

Nov. 2 — "Showtime," Ballet Hispanico, 8 p.m., KiMo.

Nov. 3 — Albuquerque Childbirth Education Assn. crafts fair, "A Children's Christmas Festival," 9 a.m. - 5 p.m., St. John's United Methodist Church.

Nov. 3 — 36th Annual Hollyberry Fair (Christmas Bazaar), 9 a.m. - 3 p.m., St. Mark's on the Mesa Episcopal Church, 431 Richmond Pl., NE, 266-2788, 821-8307.

Nov. 4 — Movietime at the KiMo: Movies by Great Directors — "Duck Soup", Leo McCarey (1933), 7 p.m., KiMo.

Nov. 8 — The Best of Broadway and International Theater: "Dracula," 8:15 p.m., Popejoy.

Nov. 9-10 — NM Symphony Orchestra, Oscar Shumsky, guest violinist; Jose Serebrier, guest conductor, 8:15 p.m., Popejoy.

Congratulations

Bill (7482) and Judy Vansalous, a daughter, Hillary Anne, Oct. 13.

Frank Burns (1821) and Carolyn Henz (1152) married in Albuquerque Oct. 6.

Knapsacks, Cryptosystems & \$1000 Rewards

So What's All The Fuss About?

It goes back to 1977, when Merkle, then a computer scientist at Stanford, and Martin Hellman devised the first cryptographic system based on the knapsack idea. The knapsack problem can be summarized this way: Given a series of numbers and a sum, is there a subset of the series that adds up exactly to that sum?

With small numbers this may seem simple. In the series 1,2,4, and 8, and the sum 11, you can see that the first, second and fourth numbers do add to 11 and so the answer to the question is Yes. But — you undoubtedly have guessed this — the cryptographers don't deal in small numbers. Ernie says a typical series uses a hundred different numbers, and they are all about 60 digits long. The sum given is typically 62 digits long.

Anyway, Merkle and Hellman proposed a way to apply this problem to two-key cryptography, and several other groups of mathematicians soon followed suit. All conceal (encrypt) information in the same way. The codemaker reveals a series of numbers, but keeps secret certain information about the way the series was chosen. The codemaker is the only person who can decrypt, but anyone can encrypt by picking a subset of the numbers and forming their sum.

To do all this the codemaker wants to find a knapsack problem that is easy for him (as the intended receiver) to solve but extremely difficult for an unintended receiver to solve. The trick, say Ernie and Gus, is to start with the problem and

then scramble it, disguise it, to make it look hard. "You make the numbers look random," says Gus. Only someone privy to the way the disguise or transformation was done could decrypt the message.

Merkle and Hellman decided to use something called modular multiplication to disguise the easy knapsack problem by destroying the structure of the message.

Going through this disguising, or modular transformation, process results in a "single-iterated" knapsack. Some thought this a secure cryptosystem. The cracking of this system in 1982 by the Israeli mathematician Adi Shamir (the "S" in the RSA two-key system) got worldwide publicity. But big achievement as that was, co-inventor Merkle cried foul. What Shamir had broken was only a *single-iterated* knapsack. "At least two or three iterations are needed to produce a margin of safety," he wrote. "The full system should be used."

What if the modular multiplication process is repeated several times? The disguise is itself disguised. Ernie agrees with Merkle that Shamir's attack on knapsacks worked only for single-iterated ones. "In all that publicity there never was anything said about breaking the full system. He did only the first step. Even if the knapsack was iterated only twice, he could not break it. So Merkle was upset. He and Hellman felt that Shamir's discovery did not threaten their more general system."

To emphasize that point, Merkle issued his \$1000 challenge.

Facility Complete; Tests Underway

Completed six weeks ago, Sandia's new 19-foot-diameter blast tube jumped immediately into a concentrated test program for the Air Force's hardened mobile launcher for the small ICBM (midgetman) missile system.

A shock wave in air, simulating a nuclear blast, is created in the 520-foot-long tube. The forces from up to a half-ton of high explosive drive the shock wave down the tube impacting into the test model like a monstrous wall. Overpressures jump from ambient to 49 psi with a blast-induced wind traveling at 1100 mph.



JIM NAKOS of Explosives Testing Division 7533 is the test project engineer. In the background is the 19-foot-diameter open end of the 520-foot-long high-strength steel tube.

Construction of the new tube, located at the Thunderwell facility south of Area III, was completed on Sept. 4; a calibration shot was conducted the next day. The six-foot-diameter driver section of the tube, where the HE is detonated, has high-strength steel walls that taper from three inches thick down to one inch at the end of the section. The driver section of the tube is positioned between the 325-foot-long, 19-foot-diameter portion of the tube and the remaining six-foot-diameter section.

Four aerospace companies under Air Force contract are competing during the concept development phase of the hardened mobile launcher program for the Midgetman missile system. Each has provided a one-sixth scale model shape for testing in Sandia's blast tube. Two tests are planned for each model — one at 33 psi and the second at 49 psi overpressures. The 33 psi test series was wrapping up this week. The Sandia-furnished test data will help the Air Force evaluate the mobile launcher concepts and design.

Requirements for the hardened mobile launcher include travel over open terrain, survival in a nuclear battleground, and launch capability for a small intercontinental missile.

Funds for both the construction of the facility and the test program are provided to Sandia by the Air Force under a reimbursable contract.

Theoretical development and technical design of the Sandia shock tube were performed by Floyd Mathews, supervisor of Explosives Testing Division 7533. Jim Nakos (7533) is test project engineer.

The extensive instrumentation system for the test facility is the responsibility of Rich Meyer (7521) and Dale Shamblin (7533). Jo Davis (7544) integrated the design requirements into detailed specifications. Bill Meahl (7544) organized accelerated procurement of the needed 750 tons of rolled steel with Joe Kerr (3715) and subcontractor fabrication efforts with Tommie Thompson (3715). Meahl and Dave

Cole (7544) directed the construction phases of the project.

Testing support is provided by Division 7556 photometrics people and Remote Areas Maintenance and Test Support Division 3618.

Supervisory Appointments

JOE MARTINEZ, JR., to supervisor of Construction Inspection Division 3633, effective Sept. 24.

Joe first joined the Labs in 1968 as a member of the One-Year-on-Campus program. He worked with the environmental test group in Area III. Joe left the Labs in 1973 for a two-year stint with Mountain Bell. Since his return to Sandia in 1975, he has been a structural/civil engineer in plant engineering.

He received a BS and MS in civil engineering from UNM. Joe enjoys skiing and activities of his church. He and his wife Carol and their two daughters live in the NE

Golf— First and second place winners of the recent SGA Cochiti Lake Two-Man Tournament were Kevin Linker (6227)-Tom Ashwell (6225) and Dan Poole (3643)-Michael Shortencarier (2364), A flight; Robert Varga (7542)-Frank Sieradzki (3464) and Marco Holoway (3618)-Tom Towne (7535), B flight; Ken Varga (2542)-John Sarkis (7653) and William Curtis (2123)-Daniel Buller (1111), C flight.

SGA's final tournament, a four-man scramble, is scheduled Oct. 27.

* * *

Running — Several Sandians participated in the Duke City Marathon held in conjunction with the annual Balloon Fiesta. Those who completed the full marathon are: Henry Dodd (6252), third in men's 40-44 age group; Kathie Hiebert-Dodd (315), third overall women's and second in 30-44; Roque Feliciano (7551), fifth in men's 50-54; Alan Bolles (5146), first in men's 60-64 — the only competitor in the division and the oldest male; Leslie Maxey (7484), third overall and first in men's 50-54 in the cardiac division; Nancy Hall (2523); Bill Hendrik (3643); Gerry Quinlan (2642); Ernest Costales (7482); Hank Westrich (1543); and Ken Hueter (332).

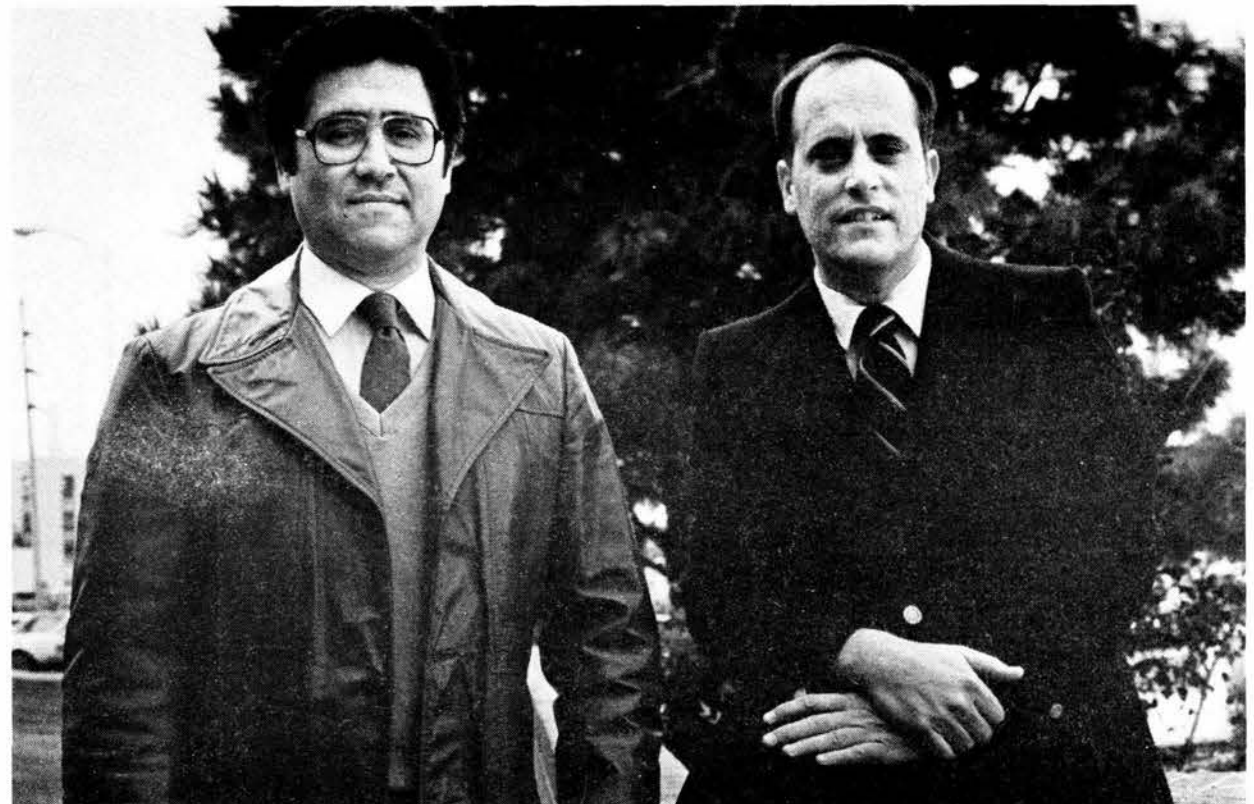
heights.

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MIKE VAHLE to supervisor of Computer Communications Design Division 2633, effective Oct. 1.

Mike has been a member of the technical staff in this same division since joining Sandia in 1977.

He received a BS and MS in applied mathematics from the University of Missouri at Rolla. Mike is a member of the Mathematical Association of America. He enjoys home computing and jogging. He and his wife Tamara and their three children live in the NE heights.



JOE MARTINEZ (3633) and MIKE VAHLE (2633)

Real Kicker Music



JOHN GARDNER (3153), a true son of the Old West — part of England, filled in for master of ceremonies Don Marchi (2512), who had to be out of town on the day the rain-delayed Hoedown was held. John performed his duties with aplomb — which is preferable to abanana.

ECP HOEDOWN



ED SHOAF (5252) was great on some romantic Western ballads.



"DON'T LET YOUR BABIES grow up to be cowboys, let 'em be doctors and Sandians and such." Gene Ives (7500) turned his operatic talents to Willie Nelson and John Denver for the Hoedown.



HEAD of the ECP Hoedown committee was Ellen Cronin (6330). Here she announces the winner of the salsa contest.



GOOD OLD-FASHIONED country-western singing by Luciano Mora (7476; left) and Abenicio Sanchez (7522) showed off the skills of the Hoedown band. Composed of Sandia musicians from several bands around town, the band was put together for the occasion by Linda Garcia (155) and Paul Harrison (7482).



ORANGE BLOSSOM SPECIAL never sounded so good. Fiddler Andy Oravec (7633) and guitarist Gerry Wymer (7546) did it right.



PICKING AND STRUMMING their way to Hoedown glory are Orlando Chavez (3423) and Sam Griego (7481).



SWING YOUR PARTNER, and promenade. Two sets of squaredancers, Sandians all but from various squaredancing clubs in town, showed off their skills at the Hoedown. Caller was Dick Siebenforcher (151).



CRACK HAZARDOUS MATERIALS TEAM was called in to judge the ECP Hoedown salsa contest. Hard at work are (from left) Dr. Ed Cassola of Medical 3330, Don Parker of Environmental Health 3311, Al Otero of Security 3435, and Paul Fleming of Safety 3441.



GENUINE ECP (Extreme Caution, Please) salsa and its creator, Eloisa Maldonado (3141), the winner of the contest. Remember that if you follow her recipe (see article), you may need the services of Security, Safety, Environmental Health, and Medical.

Several Sandians Serve

SAMPE Symposium Successful

The 16th annual SAMPE (Society for the Advancement of Material and Process Engineering) Technical Conference was a resounding success, thanks in large part to the efforts of the local SAMPE chapter, a chapter that includes several Sandians on its roster.

The three-day event, held in Albuquerque earlier this month, attracted more than 600 SAMPE members (greater than 10 percent of total membership) from six nations. It was one of the largest SAMPE conferences yet held.

The conference's 20 sessions each included four or five papers on topics like radiation effects in materials, robotics, electronics, adhesives, composite matrices, and organic materials developments.

Conference speakers were Joel Snow, director of the Science and Technology Affairs Staff in DOE's Office of Energy Research; Moya Lear, chairman of the board of LearAvia; and Col. John Friel, commander of KAFB's Space Technology Center.

Sandians on the conference committee were: Robert Martinez (7472) and Gene Frye (ret.), general chairmen; Ken Wischmann (7472) and Nick DeLollis (ret.), program chairmen; Nancy Hall (2523) and Bob Weaver (7472), arrangements; John Matsko (7476), registration; Ray Brin (ret.), publicity; Wayne Cyrus (7473), audio/visual; and Pat Conlon (7473), activities.

ECP Salsa Contest Winners

Some of you may have been lucky enough to get a taste of salsa prepared by one of the three winners in the Salsa Contest at the recent ECP Hoedown. However, 28 employees entered the contest, and comments overheard in the crowd indicate that all entries were good.

The winners were Eloisa Maldonado (3141), first place; Mary Gonzales (7476), second place; and Emma Quintana (7475), third place. Eloisa's winning recipe follows:

- 1 lg. can (#303) whole tomatoes (chopped)
- 6 raw jalapeno chiles (chopped)
- 1 small onion (chopped)
- ¼ cup chile pequin
- ¼ cup cooking oil
- 1 clove garlic (chopped)

Combine all ingredients and refrigerate overnight.



MOYA LEAR, chairman of the board of LearAvia, earned that position and the affectionate title of "Queen Lear" by carrying out her husband's dying wish to finish producing his revolutionary aircraft. Her luncheon speech at the SAMPE Technical Conference earned her a standing ovation as well — and that from a group that seldom stands for such displays. She gained some useful information from a conference session on education as well — she was recently named by President Reagan to a blue-ribbon panel to suggest improvements in the technical training of the nation's youth. Some of the Sandians who played key roles at the conference are Ken Wischmann (standing), Bob Weaver, and Robert Martinez.

Countdown for the Great American Smokeout

It's time to start the countdown for this year's Great American Smokeout. If you're a smoker, pledge to quit smoking for that one day. If you're not a smoker, pledge to help someone else quit by "adopting a smoker" for the day.

The day is the Thursday before Thanksgiving, Nov. 15.

Medical and the Friends of Health plan several events to celebrate the day — which may be your first as a non-smoker in a long time. So mark your calendar, watch for later announcements of the day's activities, and *come join us!*



On Wednesday, Nov. 7, Jon Aase, M.D., will speak on the Fetal Alcohol Syndrome and the effects of smoking on the fetus. Dr. Aase is in the Pediatrics Department at UNM and specializes in genetics research and counseling. The program will be in the Technology Transfer Center from noon to 1 p.m.

Welcome

Albuquerque

Suzette Ashment (112)
 Sydney Cahill (3733)
 Robert Clevenger (1254)
 Deal Dobranich (6444)
 Michael Eaton (1251)
 Martha Garcia (154)
 Diana Gonzales (3426)
 Ronald Jojola (3426)
 Richard Lujan (1822)
 Gary Murphy (2617)
 Dorothy Plath (1128)
 Peggy Smith (3733)
 Leonard Torrison (1233)
 Tia Weber (154)

Arizona

Victoria Di Marzio (3713)

California

Stephen Casalnuovo (2141)

Illinois

William Miller (2146)

Iowa

Samuel Miller (2146)

Massachusetts

John Dunn (7553)

New Mexico

Janice Bauer (154)
 Bruce Becker (3613)
 Ralph Chavez (3426)

Neal Counts (1232)

John Jojola (1245)

Peter Micono (1233)

Steven Volk (2141)

Michael Youngman (1126)

Pennsylvania

Terrance Witt (7241)

Texas

John Stair (7256)

Norman Stephens (7652)

Washington

Kenneth Ward (1823)

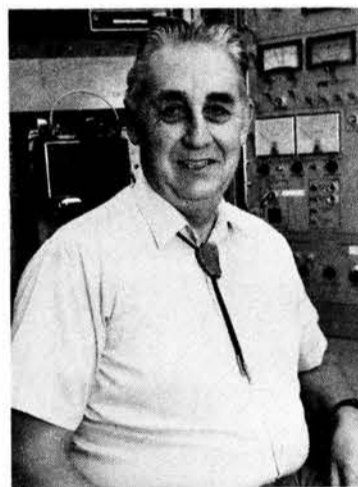


Phil Contreras, Abel Lovato, Charlie Monroe (all 3423)

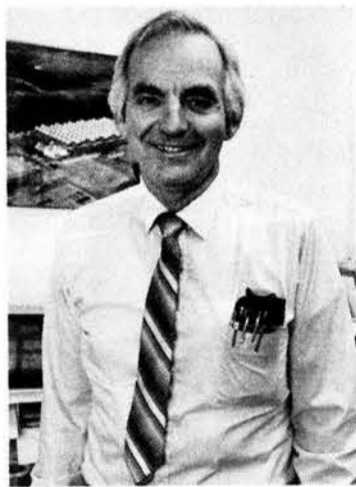
R E T I R I N G



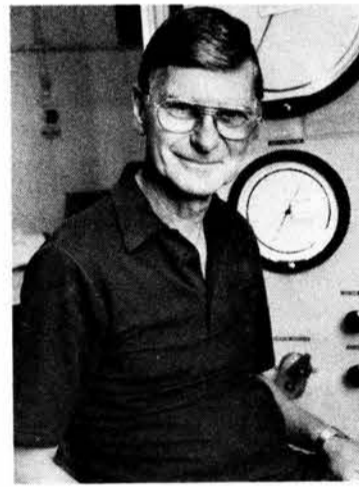
Homer Ator (5122)



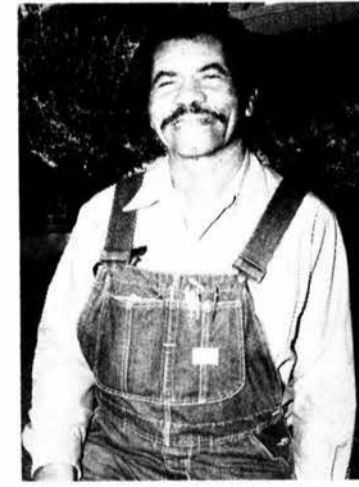
Grady Raybon (1233)



John Zimmerman (5172)



Kent Johnson (3425)



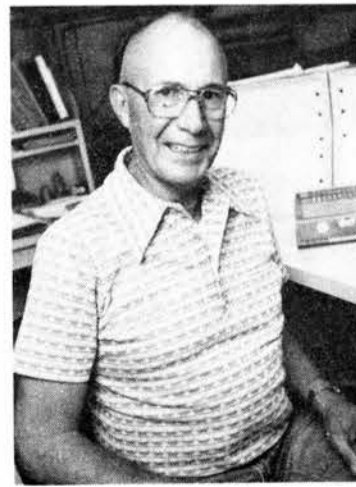
Jessie Waddles (3423)



Gene Jones (323)



Cliff Diem (7626)



Jesse Harness (1233)



Della Jelski (3152)



Fedelio Edwell (3618)

Take Note

The Nordic Dancers, an interest group of the Scandinavian Club, needs more dancers. The group meets on Wednesdays at 7:30 p.m. at the Griegos Elementary School cafeteria (1620 Van Cleave Rd. NW). Call Chris Tuttle, 262-0145, for more information.

* * *

The South 14 Bookstand — If you go south on Highway 14 past Mountainair and keep going, even when it turns to dirt, you will ultimately reach the New Mexico town with the least mellifluous name — Claunch. It's one of the ghost towns in Ralph Looney's *Haunted Highways — The Ghost Towns of New Mexico*. Others include Cabezon, Kelly, Dawson, Los Alamos (no, not *that* Los Alamos), Loma Parada, White Oaks, and many more. Which brings up a question of definition: if there's an old timer in the "ghost" town with a short fuse and a gun besides, e.g. Cabezon and Bland, is it still a ghost town? *Haunted Highways*, UNM Press, goes for \$9.95 and it's at the LAB NEWS office, Bldg. 814.

* * *

Al Chavez, supervisor of Benefits Administration and Employee Services Division 3543, has been appointed by the State Board of Education to the New Mexico Advisory Council on Vocational-Technical Education. His responsibilities as a council member relate to vocational needs and labor problems in the state.

* * *

Jeana Pineau (7535) is one of four secretaries in the state to achieve the Certified Professional Secretary (CPS) rating this year. Her certificate was awarded Oct. 9 at a meeting of the Professional Secretaries International, Albuquerque Chapter. The certification is given following the successful completion of a rigid two-day examination on behavioral science in business, business law, economics and management, accounting, office administration and communications, and office technology.

* * *

Six Sandians from the Labs' Center for Radiation Hardened Microelectronics (CRM) were recipients of the Outstanding Conference Paper Award of the 1984 Nuclear & Space Radiation Effects Conference. The authors of the paper, "Physical Mechanisms Contributing to Device 'Rebound,'" are James Schwank, Peter Winokur (both 2144), Paul McWhorter, Fred Sexton (both 2142), Paul Dressendorfer, and Dan Turpin (both 2144).

* * *

Chamber music fans take note: The 1984-85 NM Symphony Orchestra's Sinfonietta Series, "Afternoon Delights," will be held in the First United Methodist Church at 3 p.m. on Sundays. Conducted by Roger Melone, the series will consist of three afternoon chamber orchestra concerts: *Haydn's Harmonies* on Oct. 28, *Impressionist Idylls* on Jan. 27, and *Bach's Passion* on March 3. For ticket information (discounted to students and senior citizens), call the NMSO Box Office at 842-8565.

* * *

The American Institute of Aeronautics and Astronautics is hosting a dinner meeting Nov. 9 at Garrett's Desert Inn in

Santa Fe. Harrison Schmitt, Fellow AIAA, former astronaut, and former U.S. Senator from New Mexico, will be the speaker. He plans to share some anecdotes about his trip to the moon as well as review current space activities. The public is invited. Social hour starts at 6:30 p.m., the dinner and presentation at 7:30. Transportation to and from Santa Fe is available. Costs are: dinner, \$9 for adults and \$6 for students; transportation is \$2 per person. For reservations (deadline Nov. 2) or more information, call Walt Rutledge or Craig Jones (both 1635) at 4-0119 or Walt Wolfe (1631) at 6-7648.

* * *

Sandia's biggest contract ever, a \$15 million service contract with Ktech Corporation, went into effect Oct. 1. Ktech is a small business that will provide electromechanical technician support to the PBFA program in the Pulsed Power Sciences Directorate 1200 over the next five years. With lots of weekend work over a six-month period, Daniel Gabaldon (3726) was able to negotiate more than \$900,000 worth of cost savings into the contract; his former acting supervisor, Chris Leonard, played a key role in getting the project started. Purchasing was assisted by Steve Goldstein (1254), Terry Holovka (1250A), Myrna Walla (1201), Steve Ross (1200A), and Shanna Cernosek (now 144).

* * *

The Atomic Age was born 40 years ago next summer. The old-timers who were at Los Alamos during the early days are organizing another reunion and are looking for names of those who should be invited. If you were a part of the Manhattan Project before Jan. 1, 1949, you can pick up a registration form in the LAB NEWS office. Deadline is Jan. 10.

* * *

Too many marriages are up in the air. This one began that way. Joy Tomek (154) and Joe Martinez were married at sunrise on Oct. 20, in a hot air balloon floating above Albuquerque. The eight-passenger gondola also carried family and friends, including Emma Smith (also 7631). It was Joy's first balloon flight. The couple plans a more down-to-earth relationship in the future.

* * *

The Albuquerque Convention & Visitors Bureau has invited middle and upper Sandia management to attend a seminar on the ACVB's interest in planning and conducting

conferences. But the rest of us, who may sometimes honcho a conference, should also be aware of what ACVB can offer: full registration service (from badges and registration clerks to printing design and wording of materials), housing bureau, management of food and beverage functions, guidance in meeting planning, attendance promotion, spouse program planning, international hosting, and press and public relations assistance, says an ACVB release. Why all the encouragement for Sandians to host conferences? They're good for Albuquerque as well as for Sandia, the release points out. For further information, call 243-3696.

* * *

Talking with your children about safe subjects can be difficult enough. Talking with them about sex is often nearly impossible. But it's important. UNM's Maternity and Infant Care Project is running a Parent's Hotline to help you broach the subject of sexuality with your children. It's staffed by health professionals trained in sexuality education. The hotline number is 277-0302 and will be open from 8 to 5 weekdays through Nov. 5.

* * *

The American Lung Association is sponsoring a six-week "Freedom from Smoking" clinic from 7:30 to 9:30 Tuesdays, beginning Oct. 30. Enrollment is limited, pre-registration is required, and the cost is \$30. More info from 265-0732.

* * *

A local chapter of the Project Management Institute (PMI) is being formed in Albuquerque. PMI is an international nonprofit professional organization dedicated to advancing the state-of-the-art of project management. Current local members include representatives from Control Data, Dynallectron, Los Alamos, PNM, UNM, Ranchers Exploration and Development, DOE/AL, and others. A lunch meeting will be held on Oct. 30 at the Amfac Hotel to determine interest in a local chapter. If you are interested in such an association, attend the meeting or call Jerry Zimmerman (DOE/AL) on 6-3131 for more information.

* * *

Retiring this month and not shown in LAB NEWS photos are Marveta Davis (154), Gladys Lydic (5150), Joseph McDowell (2543), Jimmie Robinson (7631), and David Morrison (7483).

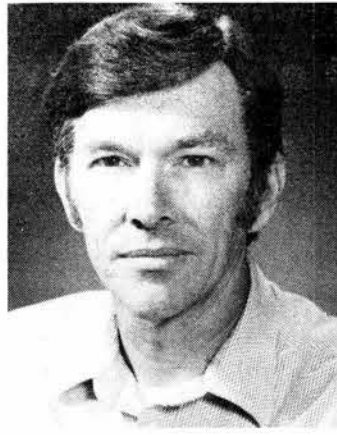


CHAIRMAN, VICE-CHAIRMAN, and members of the START (strategic arms reduction talks) delegation visited recently to discuss Sandia's work in strategic defense. Ambassador Edward Rowny (left), chairman of the delegation, is with the US Arms Control and Disarmament Agency; Ambassador Sol Polansky (center), vice-chairman, is with the State Department. Here, they query Tom Cook, EV-P 20, about pulsed power sciences.

MILEPOSTS

LAB NEWS

OCTOBER 1984



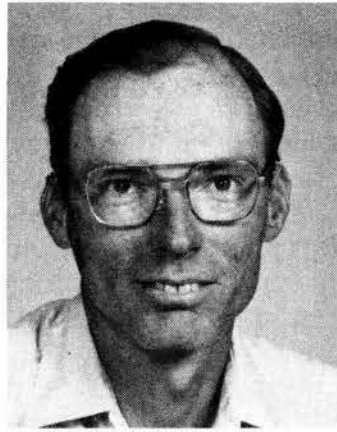
Dick Shead (312) 25



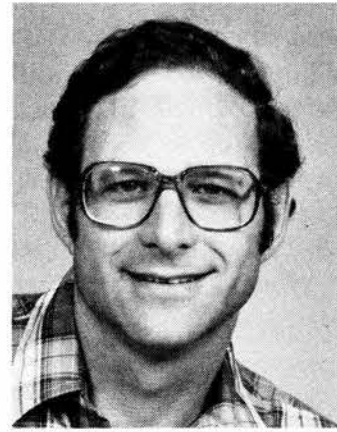
Lucille Brown (3462) 20



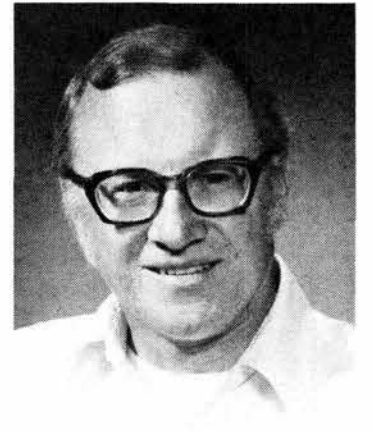
Harold Rarrick (7541) 35



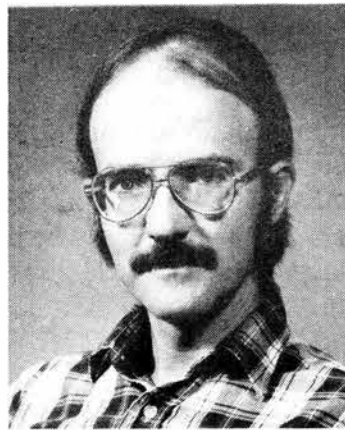
John Keilman (8241) 15



Mike Baskes (8341) 15



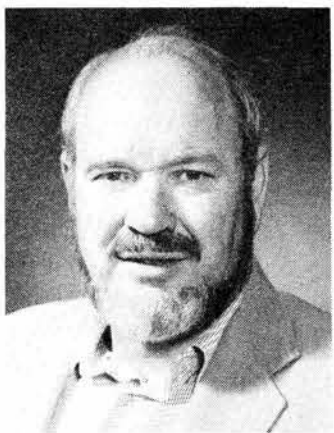
John Shane (2311) 20



Ken Bergeron (6449) 10



Gene Harrison (3462) 20



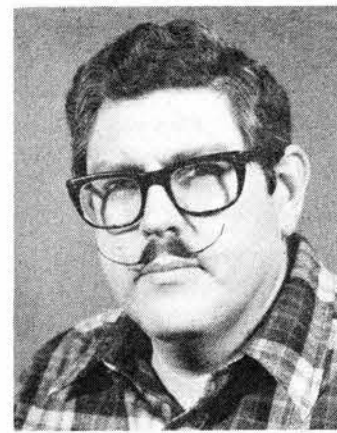
Will Boyd (6226) 20



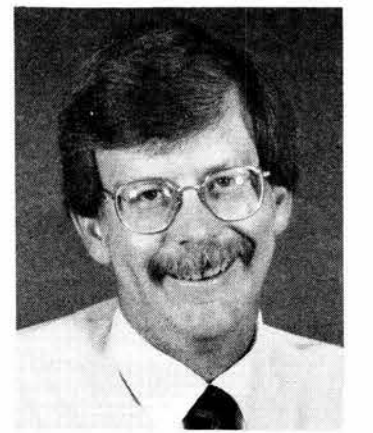
George Wladika (7633) 30



Charles Wells (3618) 35



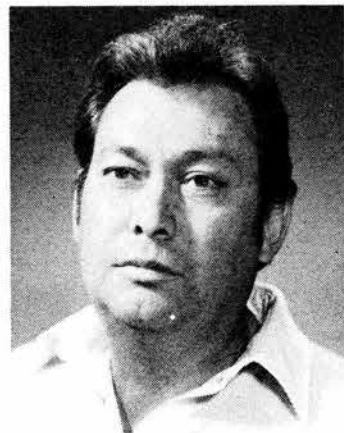
Paul Hlava (1822) 10



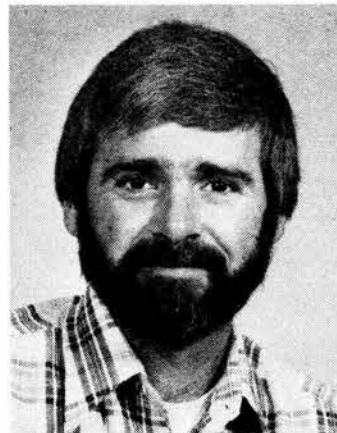
Jim Woodard (8432) 10



Jim Bartel (8452) 10



Celso Sanchez (3424) 30



Ron Hafner (8263) 10



Ed Vallejos (3435) 10

Q. The area east of Bldg. 861 could be used for parking 30 cars or more. As it is, this area is an eyesore.

A. It is true that parking lots are being lost to construction. Until recently, there were enough paved parking spaces to accommodate all of our employees. Because additional parking spaces will be lost in the near future, we plan to pave additional parking lots to ensure that there will continue to be a sufficient number of paved spaces.

Some of us don't consider the area east of the Cafeteria to be an eyesore, and we have no plans to make this area a parking

lot. I will consider what we might do to make it more attractive.

R.W. Hunnicutt - 3600

Q. Does Sandia condone bumper stickers that say "As A Matter Of Fact I Do Own The Road" on government vehicles?

A. Placing such stickers on government vehicles is, of course, contrary to policy, and Sandia does not condone intentional policy violations. We have so informed the supervisor responsible for the vehicle you mentioned. The sticker will be removed.

C.L. Brumfield -3400

Retiree Deaths

(July-September 1984)

Kathryn Callow (76)	July 3
Joseph Garcia (74)	July 14
William Shively (68)	July 23
Ralph Griffin (69)	Aug. 18
Rafael Pena (94)	Aug. 14
Larry Avila (65)	Sept. 3
Joseph Omlin (96)	Sept. 3
Henry Durflinger (88)	Sept. 8
Richard Sanchez (86)	Sept. 11
Benjamin Martinez (77)	Sept. 13
Darrel Riggs (78)	Sept. 26
Herbert Dykema (68)	Sept. 21
Walter Schmedt (73)	Sept. 28

UNCLASSIFIED ADVERTISEMENTS • UNCLASSIFIED ADVERTISEMENTS • UNCLASSIFIED ADVERTISEMENTS • UNCLASSIFIED ADVERTISEMENTS

Deadline: Friday noon before week of publication unless changed by holiday. Mail to: Div. 3162.

RULES

1. Limit 20 words.
2. One ad per issue per category.
3. Submit in writing. No phone-ins.
4. Use home telephone numbers.
5. For active and retired Sandians and DOE employees.
6. No commercial ads, please.
7. No more than two insertions of same ad.
8. Include name and organization.
9. Housing listed here for sale is available for occupancy without regard to race, creed, color, or national origin.

MISCELLANEOUS

SOFAS: Modesta's 6' formal, \$300; Kroehler sofa-sleeper, 6', Hercules earthtones, straight lines, contemporary, \$300; other furniture. Sons, 294-3953.

MARIMBA, 4-octave Leedy, \$300; Spalding golf clubs, bag, \$125; 3 pieces Samsonite, \$50; twin bed, \$25. Purdue, 256-0802 after 1.

KAY'S dinette table, 40" x 60", & 6 chairs, walnut grain formica top, beige highback chairs, \$110. O'Dowd, 299-1789.

FORD 13" wheels, 4 ea. w/3 usable tires; king size headboard; 6-gal. outboard gas tank. Erdman, 298-3097.

DINETTE set, 5-piece chrome butcher block look, \$125; solid oak school desk, \$35. Troncoso, 897-1167.

HEATER, 20,000 BTU, 220V thermostat, controlled blower, decorative fireplace effect, \$250. Pennington, 256-9506.

REBUILT '70 VW engine, AM/FM cassette deck, \$1800 OBO. Alt-wies, 865-9453.

BED FRAME, metal king or queen, new in carton, \$45; TV; wood cabinets, best offer; '73 Opel Manta parts. Garcia, 888-4735.

RCA 19" color TV, \$200. Eley, 296-3185.

SOFA, full size, loose cushion styling, earthtone textured fabric, \$225. Gosselin, 884-8107.

SKIS, 170cm Trucker Quicksilver made in Aspen, intermediate ski, Look Nevada bindings, new \$240, sell for \$135. Lassiter, 299-1492.

ALTAIR 8800B, 57K, many S100 boards, 33 ASR, dual cassette drive, 2 part-built floppies, documentation. Lambert, 293-8825.

CAMPER, 9 1/2' cabover, self-contained, gas/electric refrig., stove, oven, water heater, sleeps 4-5, \$2000 OBO. Orth, 298-8838, 296-3450.

BASEBOARD heaters, 5 220V Dayton electric, 48", 1000 watt, 3412 BTU w/thermostats, \$45 ea. Gunter, 898-7003.

SOLAR collector, hot air, 10' x 4' x 6", never used, made

by Solar 1 Co., \$750. Newman, 292-7351.

AKC reg. cocker spaniel puppies, born Sept. 12, 6 males, 2 females, \$125-\$150, buffs, silver, & browns. Serna, 865-0475.

GOLF CLUBS: 3 wood drivers, A.P. new pers. HD; new H&P Criterion; used Sigma graphite shaft, \$35 ea. Stang, 256-7793.

TRAVEL trailer, 17" single axle, sleeps 6, stove, refrig., potty, heater, cooler, 2 bottles, elec. brakes; Mountain parka, 40/42L, nearly new, \$27.50. Baxter, 344-7601.

MINK coat, fingertip length autumn haze. Schroeder, 883-0220.

THOMASVILLE bedroom set: dresser, mirror, lg. chest, sm. chest, full bed, white, \$600. Lang, 291-0650 after 5.

WOOD stove, 37"H x 21"W, \$85; new sofa table, pecan, inlaid glass on top, 54"L x 26"H, new \$220, sell for \$180. Baldonado, 892-2574.

CAMPER shell for LWB, insulated, \$250 OBO. Moore, 294-5646.

Mother Earth News, Vols. 1-76 plus Index; Organic Gardening magazines through 1980-82. Hawkins, 296-8531.

TI Color monitor w/TI 99/4A computer, including speech module, joy sticks, cables, etc., \$175; Kodak 6000 disc camera, \$30. Jones, 843-9645.

PORTABLE whirlpool for bath, Sears largest, \$200+ new, \$100; port. traction for neck, back; sit or lie, never used, \$35. Nielson, 294-1281.

PRINTER, 40 cps daisy wheel w/sheet feeder & extra ribbons & parallel cable, \$500; pair 3-way table lamps w/silver colored base, \$10. Robinson, 255-0114.

DOG carrier, airline standards, 20 x 20 x 27, used once, \$30. Brigham, 293-6914.

ANTIQUe c. 1900 loveseat, cherry-wood (?) carved back, arms, legs; upholstery petite floral design, \$550. Frames, 344-6451.

COMPOUND BOW, Pro Line Typhoon XT w/quiver, 10 wooden arrows, & finguerguard, \$160. Gurule, 298-1360.

ACCORDION, Italian-made, new, 120 bass, 10 stops, \$575. Johnson, 884-0690.

CORNET, Conn, w/case, \$80. Miller, 298-5699 after 7.

PIONEER amplifier/receiver, \$50. Roth, 265-8186.

SONY TC-558 7", reel-to-reel tape deck, 3 motors, bi-directional recording, seldom used, \$295. Gregory, 884-0483.

TINTED rear window for Ranger pickup, \$30; foul weather insulated coveralls, \$45; Bell motorcycle helmet, \$15. Webb, 294-8341.

ADAM computer/word processor, new, \$450. Flesner, 265-2136.

VIC-20 16K memory, \$55; micro-wave alarm, \$100. Siemers, 296-0651.

KAY'S 5-pc. dinette set, \$150; Olympus 28mm & 50mm lenses, \$50 ea.; Poe table, \$50. Diem, 294-3503.

BIRD DOG, female Lab-Setter cross,

black, 1 1/2 yrs. old, spayed, free to right home. Bottomly, 897-7608.

WALL HEATER, adjustable electric, 5000 w/240V, fan driven, measures 31"L, 18"W, 11"D, \$50 OBO. Kubiak, 265-6525.

LUGER pistol, 9mm, 1916 military model, all matching serial numbers, \$450. Roth, 243-3283.

DBL. BED mattress, box springs, metal frame, \$50. Garst, 884-5176.

9-PC. dining room set, limed oak; pair walnut speaker cabinets; 2 chairs, gold-green. Jeske, 299-2810.

CARPET from LR & 3 bdrs., some padding, \$85. Crame, 296-6768.

LIGHT fixture, Tiffany style, yellow stained glass, holds 2 globes, \$45. Barr, 821-5870.

ELECTRIC guitar, Ibanez Roadstar, 1 yr. old, hard case, \$175. Ewing, 268-6920.

BAZAAR & rummage sale by the Christian Women's Fellowship at Sombra Del Monte Christian Church, Nov. 2-3. Beasley, 298-3398.

TOYS, pre-school & elementary age: BMX bicycle, tricycles, big wheel, Tonkas, Barbies, Fisher Price stuff, & more, Reif, 299-2665.

KING SIZE mattress, springs, & frame, \$200. Navratil, 293-5527.

ELECTRIC garage door opener; 4 alum. frame windows; storm door; men's 10 spd. bike. Russo, 293-0315 after 6.

SLIDING glass door, db. insulated, 5' wide, \$100; woven woods, earth tone yarns, 36" x 70", set of 2, \$150; wrought iron bar stools, set of 2, \$50. Ramirez, 821-8465.

STEREO, AM/FM cassette phono combination, Sears model 91B11, 4 mos. old, 1/2 price at \$99 OBO. Roeske, 296-3946.

HORSES: 6 & 4-yr. old, trained, bay & pinto, registered 1/2 Arabian, \$800 & \$500. Grant, 865-0785.

TRAVEL trailer, 28' Avion, rear bath, loaded, \$7K/offer. Sidlauskas, 881-2562 after 5.

PINBALL machines, Williams El Toro 2-player classic & 4-player caberet, both DC & fast, \$250 & \$300. Harrell, 294-3456.

NEW '78 Datsun brake shoes & disc pads, \$15; Sears 4-amp. battery charger, \$7.50. Gregory, 268-2022.

DUPLEX beds (studio size trundle beds), two ea., \$100 ea. Oberkamp, 292-4366.

COLOR TV, 19" Magnavox, \$200. Duvall, 881-4406.

CASSETTE DECK, Dual C819, \$400 new, \$175; Zildjian 18" crash cymbal, \$110. Hammond, 296-9758.

MOVERS cartons, 60 ea. w/packing materials, assembled, lg., med., sm., wardrobe, dishpack, & mirror cartons, \$150. Klein, 298-7416.

HAM RADIOS, high frequency: IC 701 w/power supply, \$450, IC 730, \$450. McCaughey, 268-6855.

SOFA, ranch style, \$20. Swahan, 831-1579.

CASEMENT window screens, 23 5/8" x 16 5/8", \$3; 36" x 16 5/8", \$4, assorted mounting hardware, latches, cranks. Cilke,

296-3665.

TRANSPORTATION

BIKE, ladies 3-spd., \$65. Eifert, 299-3847.

'82 TRANS AM, 20K miles, fully equipped. Rodriguez, 883-4476, 345-0212 after 6.

'79 PONTIAC Firebird, one owner, stereo, T-top, rear louvers, below book, \$4195. Gallegos, 345-7147.

DIRT BIKE, Roger Docoster, black Tuf wheels, Tuf neck, gold alloy seat-post-sprocket-chain-pedals, Decoster forks, \$180. Weaver, 296-5293.

'74 AUDI Fox, \$1200. Hayes, 281-9282.

'68 MERCURY Colony Park wagon, AC, AM-FM stereo, PS, PB, PW, AT, 10-pass., \$500. Irwin, 822-1831.

BOAT, Fibercraft 15', 60hp SeaKing motor, deep "V" w/tilt trailer, 2 6-gal. tanks, \$800 OBO. Orth, 298-8838, 296-3450.

'76 HONDA motorcycle, 550-four, fairing, trunk, electronic ignition, cover, 14K miles, \$850. Greenwood, 298-5268.

'76 CHEVY 1/2-ton Fleetside, 350 V8, AT, AC, PS, new SB radials, camper shell, 2 20-gal tanks, complete, set of manuals, \$3400. Stang, 256-7793.

'72 SHASTA mini-motorhome, 18', AC, CC, 350cc Chevrolet, \$7500, negotiable. Dobkins, 294-7079.

'79 FORD van, V8, AC, PS, PB, AT, carpet, 40K miles, \$4500, negotiable. Pyo, 822-9056.

RALEIGH Grand Prix, 25 1/2" frame, alloy rims, \$85 OBO. Strip, 255-7230.

'84 DODGE Shelby Charger, loaded, 5/50 extended warranty, low miles. Hurley, 296-9264.

'70 OPEL GT, low miles, \$2100. Hubbard, 842-9431.

'78 SUZUKI 125 dirt bike, new top end, needs crank, \$125. Robb, 821-2999.

'81 CAMARO, royal blue, V6, low mileage, \$5K OBO. Baca, 821-6662.

'76 OLDSMOBILE wgn., AT, PB, PS, AC, new seats, luggage rack, \$300. Halbewachs, 268-1584.

'66 T-BIRD Town Coupe, all original, \$3800. Tucker, 877-1140.

BICYCLES: men's 26", 5-spd. touring, lights, generator, pump, tool kit, \$60; women's 26" single spd., lights, generator, basket, \$40. Newton, 296-2335.

'81 FORD F150 Supercab, AT, PS, PB, AC, CC, \$6500; boy's 26" 10-spd. bicycle, \$85. Beasley, 298-3398.

'82 ISUZU pickup, 21K miles, PS, PB, AC, AM-FM cassette, new radial whitewalls, long bed, chrome bumpers, hitch, \$5200. Hernandez, 268-5000.

'81 BUICK Century, V6, AT, PS, PB, AC, CC, \$500 under retail at \$5200. Eckelmeyer, 296-2148.

'81 RABBIT diesel, 31K miles, AC, radio, AM/FM cassette, 45 mpg,

maintenance records, special warranties in effect until end of '86, \$4300. Meister, 266-5186.

'83 HARLEY Davidson XLX 1000, 5300 miles, \$4000. Martinez, 344-8974.

'77 DATSUN 280Z, 63K miles, 4-spd., AC, AM/FM cass., \$6500 OBO. Reed, 821-6634.

'67 MG, white. Stixrud, 298-0478.

'80 MAZDA GLC, 4-spd. trans., new tires, below book, \$1900. Harker, 281-3435.

'72 FORD Bronco, AT, limited slip rear end, dual exhaust w/Turbo mufflers, AM/FM w/cassette, \$3300. Weatherbee, 869-2849.

REAL ESTATE

MOUNTAIN top, approx. 2 acres, underground utilities will include natural gas, views, 20 miles east of city. Burchard, 294-3557.

2 ACRE building site in Bosque Farms w/paved roads, gas, phone & elec.; good solar orientation, \$39K. Lanes, 281-2369.

NEAR EUBANK & Menaul, 1700 sq. ft., 3-bdrm., 1 bath, den, covered patio, \$63K, negotiable down, balance REC. Wallace, 298-3767.

CUSTOM 3-bdr., 2400 sq. ft., 2+ baths, dbl. garage, 7 yrs. old, \$94K w/terms, assumable 8.5%. Kimberling, 298-1765.

3-BDR., 2 bath, NE, many up-grades, \$83,500, assumable VA, 10 1/2% fixed. Hamilton, 296-9445.

2 ACRES in center of Cerro Loop (Los Lunas), irrigation rights, underground utilities, \$14.5K/acre, \$5K down, finance loan at 10% APR. Sena, 865-7750.

ASSUMABLE 10.5%, low down, Westview Heights, 4-bdr., 2 bath, approx. 1200 sq. ft., fully fenced, landscaped, dbl. garage. Woody, 831-6321.

3-BDR., garage, shop, LR, FR, w/fp, DR, 2 bath, 1500 sq. ft., near Mont./Wyoming, \$79K, 7 3/4% assumable. Cover, 299-5015.

WANTED

SITTER For 2-yr.-old for weekend evenings and/or occasional half days at other times, vicinity of Rio Grande & Candelaria. Jones, 843-9645.

CAMPBELL soup labels, V8 juice labels, & Fun For Fitness (Post cereals) coupons for Van Buren Mid-School science & PE equipment; need gerbels, fish, aquariums. Cox, 268-5629, 268-3833.

TOW HITCH For WWII vintage Willys Jeep & sources for Jeep parts in general. Strip, 255-7230.

SHARE-A-RIDE

TWO-MEMBER car pool needs additional riders, will merge w/another car pool, vicinity Candelaria, Griegos, 1 block off Rio Grande. Gallegos, 345-7147.

RIDER/driver to Pottstown, Penn. (Philadelphia area), depart Dec. 21, return by Jan. 1 (flexible), share expenses. Schmale, 255-4781.

Coronado Club Activities

Lobster Tonight; Spooks On Weekend

TONIGHT at Happy Hour, the dining room feature is whole Maine lobster at the very special price of \$11.95. On the bandstand, a group called Enchantment led by Paul Metoyer (3435) plays a danceable variety of very pleasant tunes. Happy Hour prices (very reasonable) are in effect from 4:30 until 8:30 when the music starts. Dining room hours are from 6 to 9. Call the Club office, 265-6791, *right now* to find out about reservations.

Next Friday, Nov. 2, Happy Hour features two-for-one filet mignon for \$11.95 or two-for-one snow crab for \$10.50. The Isleta Poor Boys play for dancing.

TOMORROW is Halloween howling time for adult Club members. It's a costume party — time for spooks, witches, werewolves, and goblins to reveal their true character. Prizes will be awarded for best costumes. On the bandstand, a good group called Amigas will make the appropriate sounds for a screaming good time. The tab for a filet mignon super dinner is \$7.95. Call 265-6791 for reservations.

ON SUNDAY, Oct. 28, kids have their night. Bring the cute little devils out to enjoy the Club's famous House of Horrors starting at 6 p.m. There'll be games upstairs with lots of prizes, more prizes for best costumes, and numerous goodies. Hamburgers and hot dogs will be available. Kids under 12 pay \$1 for a book of tickets good for five games, a bag of popcorn, a coke, and admission to the House of Horrors where Frankenstein, the Wolfman, the Mad Butcher, and assorted monsters, spooks, witches, and ghouls live. Adults with great courage may enter for 50 cents. Members and families only, please

FREE MUNCHIES and goodies continue to be spread at Happy Hours on Mondays and Wednesdays in the main lounge. On Mondays, the troops watch national football on the big screen. On Wednesdays, there's no big deal — it's just a good time to get together with friends for a mid-week break.

VARIETY NIGHT on Saturday, Nov. 3, has a new time — c'mon out around 4 p.m. and enjoy super sandwiches, hot dogs, and hamburgers. At 5:30, Don Marchi (2512), the man with the magic wand, will entertain. The movie is Walt Disney's *Blackbeard's Ghost*. Admission is free to members and families.

CORONADO SKI CLUB holds its first ski equipment maintenance clinic of the season on Thursday, Nov. 8, in the El Dorado Room at 7:30 p.m. Brian Gallagher (Competitive Spirit) will discuss equipment care in general, do-it-yourself repair of ski edges and bottoms, and lubricating, setting, and checking bindings.

THE BIG ONE for next month is called **Membership Night**, and it's scheduled on Saturday, Nov. 10. Cost for the evening, which includes a super buffet, is \$3.95. Door



PREPARING for the big Halloween costume party at the Club tomorrow night are Marsha Stablein (1230) and Steve Rosenthal (1264), maybe. Prizes will be awarded for the best costumes, filet mignon is the dining room special, and the tab is \$7.95. Call 265-6791 for reservations.

prizes in the form of a free family pool membership for next summer, a free dinner for two, two tickets for the flambe' dessert cart and free drink coupons will be given away. In addition, beer and all well drinks are priced at 50 cents for the event. On the bandstand, The Griego Brothers featuring Sam Griego (7481) on guitar and vocals will make the music for dancing. At intermission, Janette Benedon, a bellydancer/magician, will present the "Magic Dance Show." Mark your calendar and make your reservations now.

THE CLUB announces the Second Annual Arts and Crafts Show and issues a call for exhibitors. Any Club member and immediate family may exhibit their personal work on Saturday, Nov. 17, from 10 to 4. Everyone is invited to enjoy the show, make some pre-Christmas purchases. Booth fees are \$5. Contact Mary Ann Biggs (265-4661) or Betty Clendenin (299-2071) to reserve booth space or for more information.

TRAVEL — The Mazatlan tour group had its pre-trip meeting last week. There might be room for a few more travelers to sign up if they contact the Club office, 265-6791, right away. The trip is scheduled Nov. 13-20 and costs \$399. The package includes airfare, transfers, seven nights at the luxurious Playa Mazatlan, a cocktail party, a Fiesta party, and bellman tips.

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A travel program on Mediterranean cruises is scheduled Monday, Nov. 5, at 7:30 p.m. in the ballroom. If 100 attend, a door-prize—weekend for two in New Orleans or \$800 credit on a Mediterranean cruise—will be given away. Members only, please.

DISCOUNT TICKETS to Albuquerque's Commonwealth and General Cinema Theaters are available for \$2.50 at the Club office.

Sandia FY 1984 Payroll Exceeded \$249 Million

The Sandia National Laboratories payroll for fiscal year 1984, which ended Sept. 30, 1984, amounted to \$249.1 million at SNLA and \$43.3 million at SNLL. For FY83, these figures were \$231.1 million for Albuquerque and \$37.7 million for Livermore. Salaries of some 80 employees at NTS and TTR are included in the Albuquerque figure.

At the end of FY84 there were 8427 on roll at Sandia, including 1101 at Livermore. The total is 297 more than at the end of FY83.

Assets of the DOE's installations operated by Sandia totaled \$761.7 million at the end of FY84, compared to \$625.3 million in FY83. These figures represent undepreciated value of buildings and facilities at SNLA, SNLL and TTR. All assets are the property of DOE, but are used and operated by Sandia in research and development work for DOE.

Purchases by Sandia in New Mexico amounted to \$175.1 million for FY84. About 98 percent of the amount, or \$171.6 million, went to Albuquerque firms. Purchases from other DOE contractors are not included. Purchases in the state in FY83 amounted to \$158.4 million.



Here are a couple of current volunteer opportunities for employees, retirees, and family members. If you would like more information, call Karen Shane (4-3268).

STUDENTS AGAINST DRUNK DRIVERS needs a volunteer area coordinator to assist student leaders during school year. Another volunteer is needed to coordinate Nov. 14 workshop planned and conducted by students.

BUSINESS AWARENESS WEEK is an annual program for New Mexico's high school students that is designed to introduce them to the challenges and concepts of the free enterprise system. Volunteers are needed to guide and counsel student "companies" for a week next June on the NMSU campus in Las Cruces.

JAPAN'S FIRST SPACEPERSON

The Japanese are getting ready to pick their first astronaut, and Tokyo's space agency has applications from more than 530 men and women for the role. Most are between 20 and 30 (far younger than the average of U.S. astronauts), and more than 40 are women. After screening and tests, three finalists will be chosen by the middle of 1985. After training, one will be tapped to ride aboard an American space shuttle flight now set for January 1988.

— Forbes